1.1GHz Prescaler With Stand-By Mode

MC12083

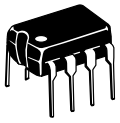
MECL PLL COMPONENTS

÷2
PRESCALER
WITH STAND–BY MODE

The MC12083 is a ÷2 prescaler for low power frequency division of a 1.1GHz high frequency input signal. On–chip output termination provides output current to drive a 2pF (typical) high impedance load. If additional drive is required for the prescaler output, an external resistor can be added parallel from the OUT Pin to GND to increase the output power. Care must be taken not to exceed the maximum allowable current through the output.

Stand–By mode is featured to reduce current drain to 250µA typical when the stand–by pin SB is switched LOW disabling the prescaler.

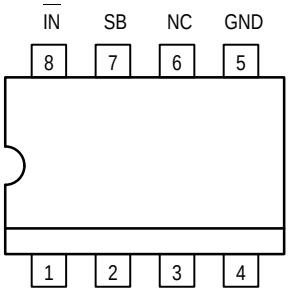
- 1.1GHz Toggle Frequency
- Supply Voltage 2.7V to 5.5V
- Low Power 4.5mA Typical at V_{CC} = 2.7V
- Operating Temperature –40 to +85°C
- On–Chip Termination



P SUFFIX
8–LEAD PLASTIC PACKAGE
CASE 626–05

D SUFFIX
8–LEAD PLASTIC SOIC PACKAGE
CASE 751–05

Pinout: 8–Lead Plastic (Top View)



A LOW on the Stand–By Pin 7 disables the device.

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Power Supply Voltage, Pin 2	–0.5 to +7.0	VDC
T_A	Operating Temperature Range	–40 to +85	°C
T_{stg}	Storage Temperature Range	–65 to +150	°C
I_O	Maximum Output Current, Pin 4	10.0	mA

ELECTRICAL CHARACTERISTICS (V_{CC} = 2.7 to 5.5V; T_A = –40 to +85°C)

Symbol	Parameter		Min	Typ	Max	Unit
ft	Toggle Frequency (Sine Wave)		0.1	1.4	1.1	GHz
I_{CC}	Supply Current Output (Pin 2)	V_{CC} = 3.0V V_{CC} = 5.5V		4.4 4.8	6.5 6.5	mA
ISB	Standby Current	V_{CC} = 3.0V V_{CC} = 5.5V		250 500	350 600	µA
V_{IH}	Standby Input HIGH (SB)		2.0		V_{CC}	V
V_{IL}	Standby Input LOW (SB)		GND		0.8	V
V_{OUT}	Output Voltage Swing (Note 1.)	2pF Load @ 500MHz Input 2pF Load @ 750MHz Input 2pF Load @ 1100MHz Input	700 600 400	800 700 450		mV_{PP}
V_{IN}	Input Voltage Sensitivity	100–250MHz 250–400MHz 400–1100MHz	400 200 100		1000 1000 1000	mV_{PP}

1. Assume 2pF load, V_{CC} = 2.7V, V_{IN} =minimum specification for each frequency band, T_A = 85°C

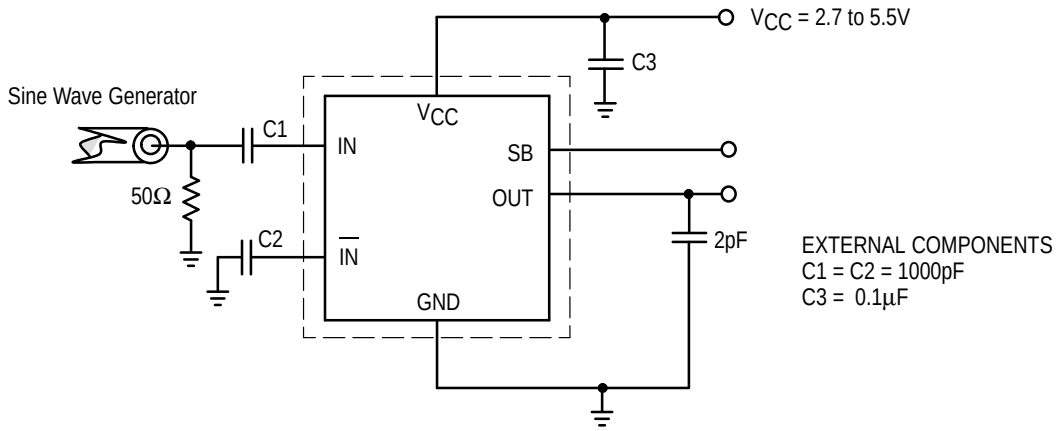


Figure 1. AC Test Circuit

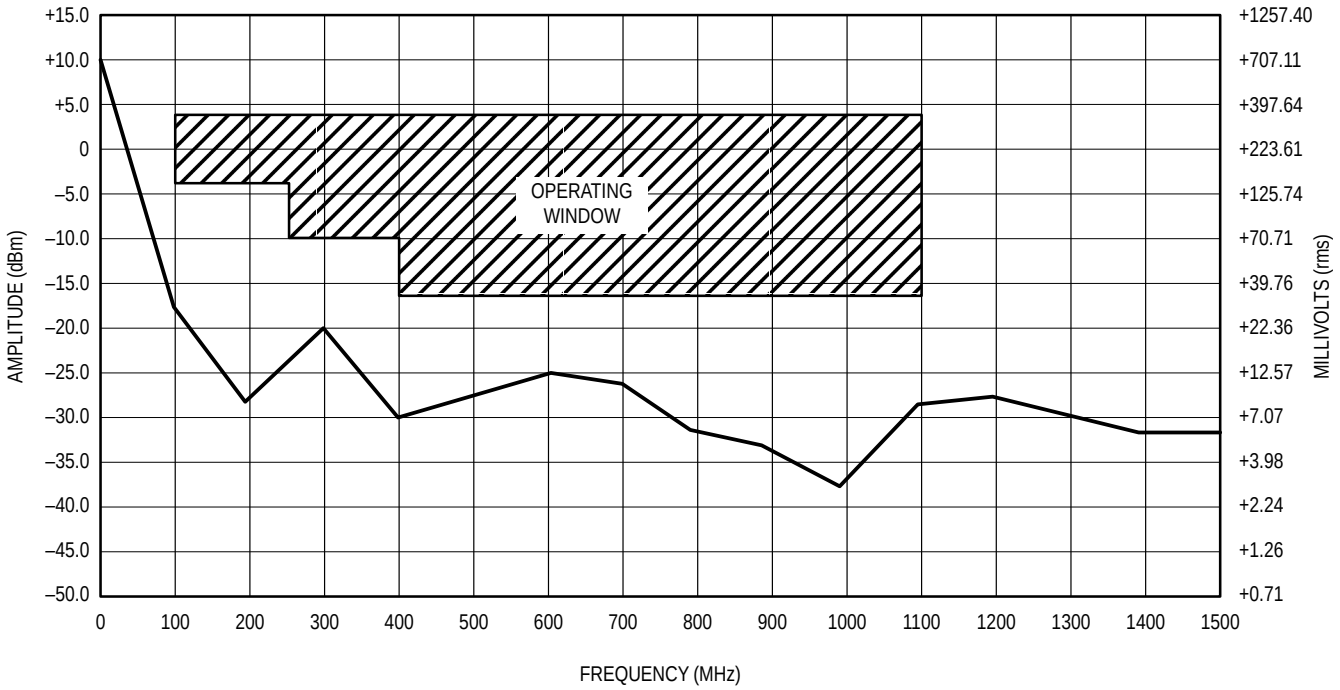


Figure 2. Input Signal Amplitude versus Input Frequency
Divide Ratio = 2; V_{CC} = 2.7V; T_A = 25°C; Output Loaded With 2pF

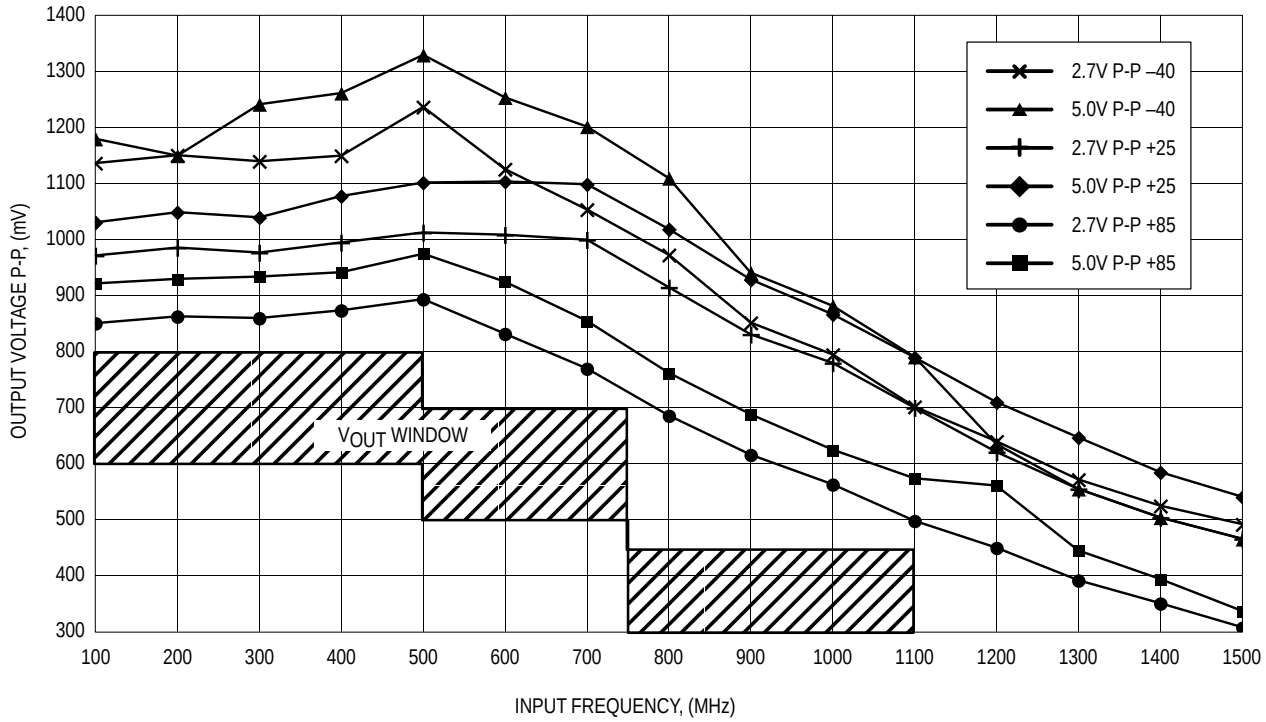
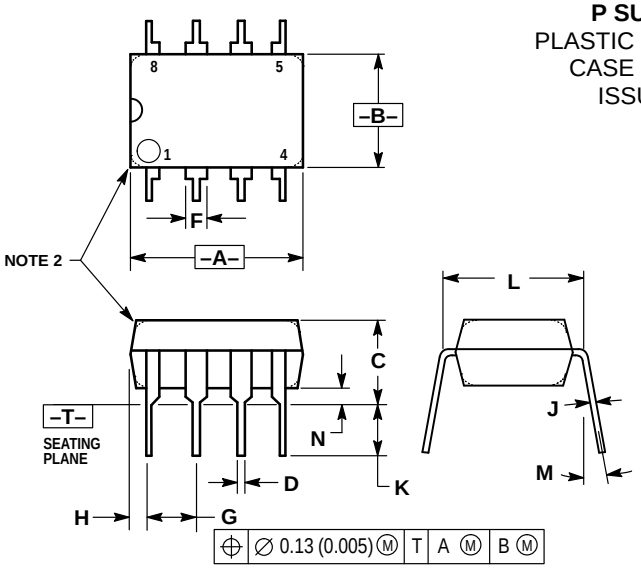


Figure 3. 12083 Output Peak–to–Peak at 2pF Load

OUTLINE DIMENSIONS

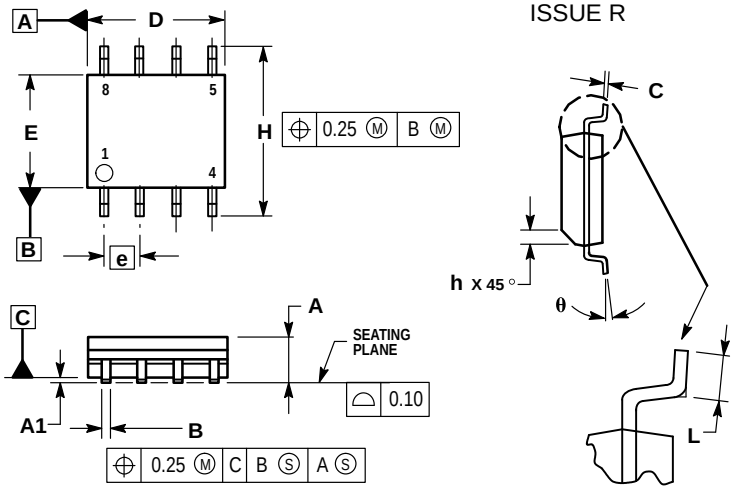
P SUFFIX
PLASTIC PACKAGE
CASE 626–05
ISSUE K



NOTES:
1. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	9.40	10.16	0.370	0.400
B	6.10	6.60	0.240	0.260
C	3.94	4.45	0.155	0.175
D	0.38	0.51	0.015	0.020
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	0.76	1.27	0.030	0.050
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	—	10°	—	10°
N	0.76	1.01	0.030	0.040

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751–05
ISSUE R



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
5. DIMENSION B DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE B DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS	
DIM	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.35	0.49
C	0.18	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.25
θ	0°	7°

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